**C) PARABOLA**

The parabola in the Level 3 Conics course is similar in structure to the parabola studied in Level 1 and Level 2 Maths, but this time it is on its side.

The basic equations are:

vertex at (0, 0)

vertex at (h, k)

And is the **focus**, and the distance of the focus from

the vertex is called the **focal length**.

To do a quick sketch when given the equation of the parabola,

mark 3 points:

Point 1: vertex

Point 2:

Taking into account translation

Point 3:

**COMPLETING THE SQUARE FOR A PARABOLA**

(-2, 0)

(-3, 2)

(-2, 4)

Examples:

1) Sketch .

Therefore, vertex = (-3, 2). Coefficient of x = 4a, i.e. 4 = 4a, therefore .

Quick sketch: Point 1 = vertex (-3, 2), Point 2 = (-2, 4), Point 3 = (-2, 0).

2) Sketch .

(-1.5, 5)

(-3, 2)

(-1.5, -1)

Therefore vertex = (-3, 2). Coefficient of x = 4a, i.e. 6 = 4a, therefore .

Quick sketch: Point 1 = vertex (-3, 2), Point 2 = (-1.5, 5), Point 3 = (-1.5, -1).

How to form an equation, given the graph of a parabola:

1) Start with the basic equation of a parabola: either or .

2) Pick a point on your parabola that is NOT the vertex.

3) Substitute the coordinates of that point into the equation for a parabola, and solve for .

4) Write your final equation.

Worksheet, Delta Ex 37.5 pg 371 Q1 – 4, Extension: Q5 – 8